

Activating an Earthquake Investigation

Selecting Earthquakes to Be Investigated

The EERI Executive Committee is composed of the officers of the Board of Directors. Together with the Executive Director and the LFE Project Manager, the Executive Committee decides which earthquakes EERI will investigate. In general, EERI will investigate earthquakes in the United States if they cause damage in a populated area. Earthquakes occurring elsewhere in the world will be investigated when they cause damage to a populated area, and when lessons might be learned that add to the body of engineering and scientific knowledge and have application to the U.S.

Criteria for determining whether or not an earthquake investigation will take place are applied on a case-by-case basis. Criteria include: the accuracy and source of the earthquake information, preliminary magnitude and epicentral information, early damage reports, geographic location, potential for relevance to the United States, access to the area, and availability of investigators and funds.

EERI is notified on a 24-hour-a-day basis of earthquakes by the United States Geological Survey—National Earthquake Information Service (USGS-NEIS) in Golden, Colorado. Guidelines for notification are:

Worldwide:

- Magnitude 6.5 or higher
- Below magnitude 6.5 if it causes damage

United States:

- Magnitude 6.0 or higher
- Magnitude 4.5–5.9 if it causes damage

Current procedure calls for notification of the LFE Project Manager and the EERI Executive Director.

Investigation Process

A simplified description of the typical earthquake investigation process is as follows:

1. Notification and collection of preliminary information by LFE Project Manager and EERI Executive Director.
2. Determine whether local members are available to carry out investigation or if there are other reconnaissance efforts already in the field.
3. Investigation decision.
4. Coordination with other interested groups, agencies, and private engineering firms.
5. Recruitment of team members.
6. Coordination of funding, travel, and other logistical matters. Provide team members with letters of introduction, Field Guides, Team Member Guidelines, and EERI Release Form.
7. Establish field office and daily information sharing.

8. Field investigation.
9. Public briefings.
10. Report preparation.

Several of the above steps may proceed simultaneously.

Level of Investigative Response

Depending on the severity of the event, one of two types of investigations might be activated in response to an earthquake:

- Small, informal local member investigation
- Reconnaissance Team investigation

In general, local member investigations are activated for less damaging events, and Reconnaissance Teams are activated for moderate to severe events.

Selecting Team Members

In general, Reconnaissance Team members and the Team Leader are selected from the EERI membership. For a U.S. earthquake, the Reconnaissance Team Leader will be selected from the EERI membership, with the provision that he/she not be a local inhabitant with competing private or professional responsibilities.

Reconnaissance Team members must be interested and capable persons representing each of the various disciplines determined to be important for the specific earthquake. Previous field investigation experience is desirable, but interest, availability, and capability are also high-priority criteria. For earthquakes abroad, it is desirable that the Team Leader and some of the team members be able to speak the language of the area.

Reconnaissance Team members will be selected from applications submitted by EERI members indicating their interest in serving on a Reconnaissance Team. Questionnaires are available from the EERI office and are published periodically in the EERI Newsletter.

Participants in EERI LFE Project investigations are volunteers and take part in investigative and presentation activities at their own risk. Participants are expected to be aware of the dangers inherent in field investigations. Refer to Appendix A, Forms: EERI Release Form.

Responsibilities of Investigative Teams

Field investigators are expected to assess the nature and extent of damage, noting what did not fail as well as what did. In addition to documenting damage, field investigators should attempt to determine failure mode, factors that may have contributed to failure, and what the implications of the damage are, and identify any secondary impacts. They should also note any recommendations that may improve seismic response.

Those chosen for a Reconnaissance Team will be given guidelines detailing their specific obligations for that earthquake. Team members are expected to contribute to subsequent briefings, reports, articles, or other activities organized to disseminate information. General functions and responsibilities of investigation teams are outlined below.

Minor or Distant Earthquakes

For small earthquakes with modest damage in the U.S., or for moderate earthquakes abroad, the Project Manager draws upon the LFE database to identify EERI members in that area who could be called upon to conduct a reconnaissance investigation and submit a brief report for publication in the EERI Newsletter within a month or two of the event.

In the event damage is more severe than originally anticipated, the local member contact will gather preliminary damage information and immediately advise the LFE Project Manager or Executive Director so that a decision can be made regarding a more comprehensive response.

Should EERI decide to send a Reconnaissance Team, the local contacts will make necessary informational contacts for the Reconnaissance Team; direct them to sources of maps, information, important facilities, and other information; and assist in establishing the EERI field office. Local contacts may also become part of the Reconnaissance Team.

Damaging Earthquakes Abroad

For significant earthquakes abroad that hold potentially significant lessons for U.S. practice, a multidisciplinary U.S. Team of 4–8 members is sent into the field for approximately one week. Upon return they provide a preliminary report to the EERI Newsletter and a more complete report to be issued approximately six months after the event, as a supplement to the journal *Earthquake Spectra*, enabling the reconnaissance report to be archived with that volume year. Refer to Section 4, Responsibilities of LFE Project Participants, for a detailed discussion of Team Members' responsibilities.

The two basic functions of a Reconnaissance Team are to:

1. Collect readily available, perishable data in an effort to learn as much as possible about the nature and extent of the damage and identify possible gaps in existing research or in the practical application of scientific, engineering, and policy knowledge.
2. Make recommendations regarding the need for further research and suggest possible foci.

Reconnaissance Teams should be prepared to spend several days to two weeks in the field. Typical responsibilities include:

1. Make a rapid general damage survey of the affected area.
2. Participate in coordination meetings with other agencies/investigators and report results.
3. Assess need for follow-up research and recommend specific areas, facilities, and subjects that merit further attention.
4. Provide debriefings to researchers and/or funding organizations prior to subsequent in-depth investigations.
5. Compare and contrast effects and impacts with typical U.S. experience.
6. Coordinate closely with EERI field office and with LFE Project Manager.
7. Contribute to required reports.

The size and composition of the Reconnaissance Team will depend on the location of the earthquake and the extent of damage. However, the size will be limited, of necessity, by funding as well as by efficient operation under the usually difficult conditions of transportation, communication, and subsistence. For events that require extensive investigation, teams may be divided into groups, with each group focusing on a particular aspect of the investigation.

Significant Earthquakes in the U.S.

In the past, significant earthquakes in the U.S. were assigned similar, small, multidisciplinary teams to investigate and prepare a reconnaissance report. Today, however, interest in earthquake investigation, coupled with the ability to travel, has grown enormously. As a result, EERI has evolved its reconnaissance activities to take advantage of vastly expanded data gathering resources and is placing substantially greater emphasis on coordination, report preparation, and dissemination.

The current procedure recognizes the growing interest in investigation in the professional community and reflects the fact that EERI members are volunteers. Instead of fielding a self-contained team of 6–8 people, who then have the burden of gathering voluminous amounts of information, EERI has determined that it is far more effective to work closely with other groups, private firms, universities, and individuals who travel to the field under those auspices, and who can provide comprehensive summaries to EERI Team Coordinators representing each area of interest, e.g., buildings, bridges, lifelines, or emergency response. The responsibility then lies with the Team Coordinators and the Team Leader to prepare the final Reconnaissance report. Refer to Section 4, Responsibilities of LFE Project Participants, for a detailed discussion of the responsibilities of Team Leaders and Coordinators.

Financing Earthquake Investigations

Much of EERI's work depends on voluntary contributions of its members. This is also true of post-earthquake investigations. In many cases, team members have absorbed all the costs associated with their participation in an investigation. In other cases, direct expenses such as travel, meals, and lodging have been reimbursed. Depending on the availability of funds, particularly from grants that support the LFE Project, direct expenses will be reimbursed. EERI is not financially able to compensate team members for time and materials spent on earthquake investigation activities.

EERI assumes no financial responsibility for investigators sponsored by other organizations, even if they accompany EERI's team. Funding for such other investigators is the responsibility of the sponsoring organization.